

# State of the Workforce Report X: Region 3

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Center for Business and Economic Research  
Culverhouse College of Commerce

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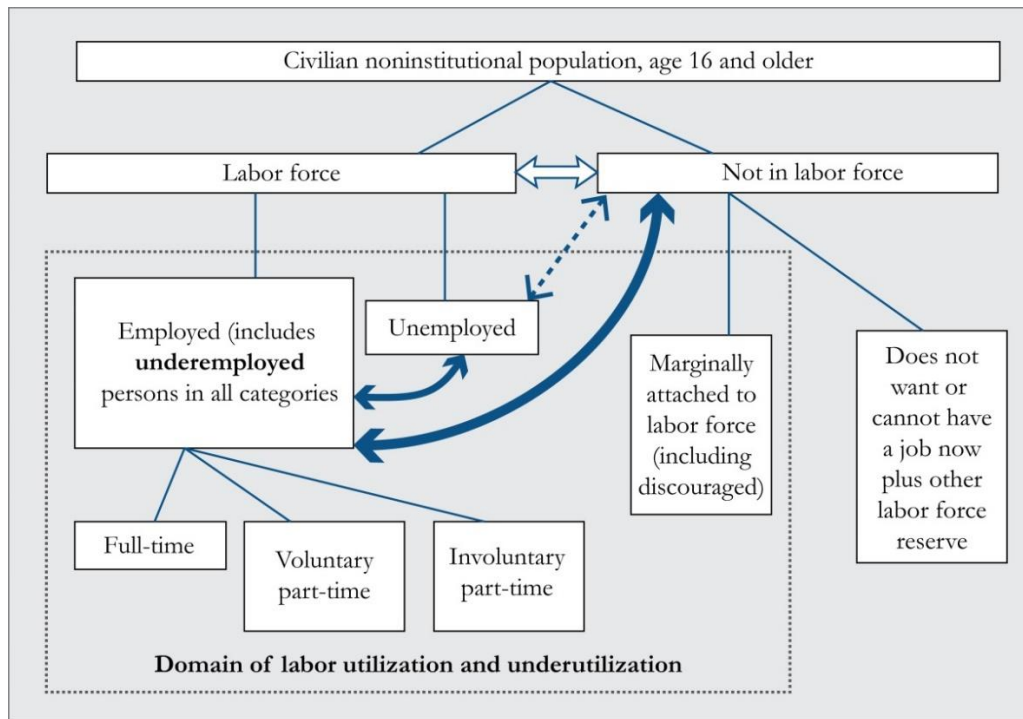
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## Summary

- This report analyzes workforce supply and demand issues using available metrics of workforce characteristics for Workforce Development Region 3 and presents some implications and recommendations.
- Region 3 had a 6.1 percent unemployment rate in March 2016, with 8,399 unemployed. An underemployment rate of 26.7 percent for 2015 means that the region has a 42,783-strong available labor pool that includes 34,384 underemployed workers who are looking for better jobs.
- Net out-commuting rose from 5,388 in 2005 to 6,942 in 2014. Increased commuting within the region and more in- and out-commuting led to congestion, which can slow economic development. Congestion eased in 2015 from 2014 but continuous maintenance and development of transportation infrastructure and systems is needed to avoid interruptions.
- By sector the top five employers in the region are manufacturing; health care and social assistance; educational services; retail trade; and accommodation and food services. In the first quarter of 2015 these five industries provided 68,334 jobs, about 65.0 percent of the regional total. Two of the leading employers—manufacturing and educational services—paid higher wages than the region’s \$3,152 monthly average. Economic development should continue to diversify and strengthen the region’s economy by retaining, expanding, and attracting more high-wage providing industries. Workforce development should also focus on preparing workers for such industries.
- On average 4,775 jobs were created per quarter from second quarter 2001 to first quarter 2015; quarterly net job flows averaged 506. Job creation is the number of new jobs that are created either by new businesses or through expansion of existing firms. Net job flows reflect the difference between current and previous employment at all businesses.
- The top five high-demand occupations are Team Assemblers; Registered Nurses; First-Line Supervisors of Production and Operating Workers; General and Operations Managers; and Construction Laborers.
- The top five fast-growing occupations are Personal Financial Advisors; Logisticians; Industrial Engineering Technicians; Helpers—Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters; and Team Assemblers.
- The top 50 high-earning occupations are in management, engineering, health, architecture, postsecondary education, and computer fields and have a minimum salary of \$74,393. Seven of the top 10 occupations are in health care and the remaining three are in management.
- Of the top 40 high-demand, the top 20 fast-growing, and 50 high-earning occupations, four—Industrial Engineers; Computer Systems Analysts; Software Developers, Applications; and Architects, Except Landscape and Naval—belong to all three categories. Eleven occupations are both high-demand and high-earning and 15 are both high-demand and fast-growing.

- Of the region's 638 occupations, 53 are expected to decline over the 2012 to 2022 period, with 20 occupations falling by at least nine percent and losing a minimum of 10 jobs each. Education and training for these 20 occupations should slow accordingly.
- Skill and education requirements for jobs keep rising. Educational and training requirements of high-demand, fast-growing, and high-earning occupations demonstrate the importance of education in developing the future workforce. In the future, more jobs will require postsecondary education and training at a minimum.
- The importance of basic skills generally and for high-demand, high-growth, and high-earning jobs indicates a strong need for training in these skills. For Region 3 the pace of training needs to increase for technical, systems, and resource management skills. The scale of training should be raised for basic and social skills. Ideally, all high school graduates should possess basic skills so that postsecondary and higher education can focus on other and more complex skills. Employers should be an integral part of planning for training as they can help identify future skill needs and any existing gaps.
- From a 2012 base, worker shortfalls of about 12,600 for 2022 and 21,600 for 2030 are expected. This will demand a focus on worker skills and expected shortfalls through 2030. Worker shortfalls for critical occupations will also need to be addressed continuously. Strategies to address skill needs and worker shortfalls might include: (1) improvements in education and its funding; (2) use of economic opportunities to attract new residents; (3) focus on hard-to-serve populations (e.g. out-of-school youth); (4) lowering the high school dropout rate; (5) continuation and enhancement of programs to assess, retrain, and place dislocated workers; (6) encouragement of older worker participation in the labor force; and (7) facilitation of in-commuting.
- Improving education is important because (i) a highly educated and productive workforce is a critical economic development asset, (ii) productivity rises with education, (iii) more educated people are more likely to work, and (iv) it yields high private and social rates of return on investment. Workforce development must view all of education and other programs (e.g. adult education, career technical training, worker retraining, career readiness, etc.) as one system. Funding to support workforce development may require tax reform at state and local levels and should provide for flexibility as workforce needs change over time and demand different priorities. Publicizing both private and public returns to education can encourage individuals to raise their own educational attainment levels and also promote public and legislative support for education.
- Higher incomes that come with improved educational attainment and work skills will help to increase personal income for the region as well as raise additional local (county and city) tax revenues. This is important, even for a region that has relatively high population and labor force growth rates.
- Both workforce development and economic development are very essential components in building a strong, well-diversified regional economy.

## Labor Utilization and Supply Flows



Source: Addy et al<sup>1</sup> and Canon et al<sup>2</sup>

The chart above presents labor utilization and supply flows that explain labor market dynamics in view of recent study findings. The civilian noninstitutional population age 16 and above is comprised of participants in the labor force and nonparticipants. The labor force is made of employed and unemployed persons; the unemployed do not have a job but are actively searching for work. Employed persons include fully employed and underemployed persons in all categories of work (full-time, voluntary part-time, and involuntary part-time). Nonparticipants in the labor force include retirees (voluntary and involuntary), people who do not want to or cannot work for various reasons (e.g., disability, caring for family members, in school or training, etc.), discouraged workers, and other labor force reserve. It has been suggested that a subgroup of nonparticipants referred to as the “waiting group” is more likely than the rest of the nonparticipants to take a job if wages and conditions are satisfactory, but people in this group do not actively search for work. New evidence has shown that between January 2003 and August 2013, the flow of nonparticipants into employment was 1.6 times that of unemployed persons transitioning into employment, which may be due to the presence of the waiting group<sup>1,2</sup>. Nonparticipant flows to employment are larger in services, management, and professional occupations while unemployed flows to employment are higher in physically intensive occupations such as construction workers and miners. Industry effects should vary by the type and number of occupations they contain. This finding enhances the common understanding of labor market dynamics and influences workforce availability and skills gap analyses.

<sup>1</sup> Addy, S.N., Bonnal, M., and Lira, C. (2012). Towards a More Comprehensive Measure of Labor Underutilization: The Alabama Case, *Business Economics*, vol. 47(3).

<sup>2</sup> Canon, M.E., Kudlyak, M., and Reed, M. (2014). Not Everyone Who Joins the Ranks of the Employed was “Unemployed”, *The Regional Economist*, January.

## Workforce Supply

### Labor Force Activity

The labor force includes all persons in the civilian noninstitutional population who are age 16 and over and who have a job or are actively looking for one. Typically, those who have no job and are not looking for one are not included (e.g. students, retirees, discouraged workers, and the disabled). Table 3.1 shows labor force information for Region 3 and its seven counties for 2015 and for March 2016. Alabama labor force information is available from the Labor Market Information (LMI) Division of the Alabama Department of Labor. LMI compiles data in cooperation with the U.S. Bureau of Labor Statistics.

**Table 3.1 Region 3 Labor Force Information**

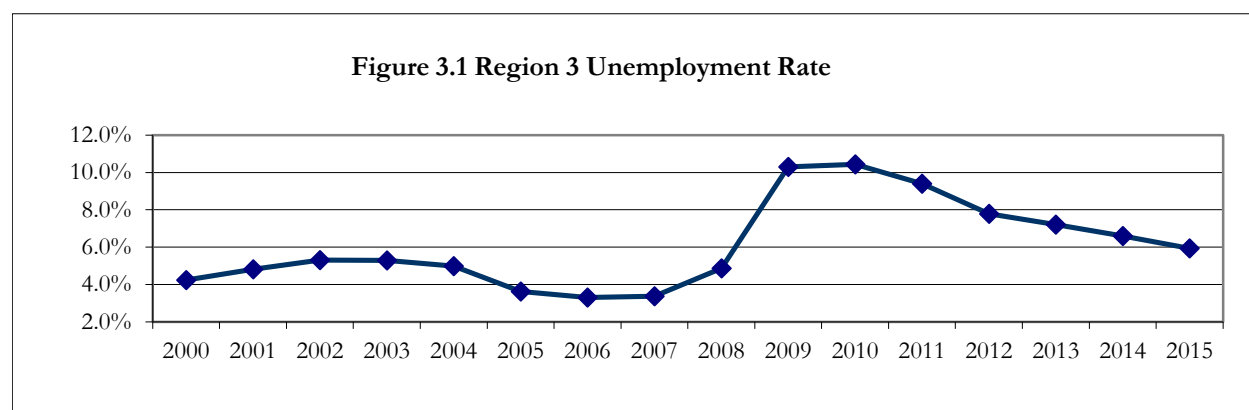
	2015 Annual Average			
	Labor Force	Employed	Unemployed	Rate (%)
Bibb	8,490	7,929	561	6.6
Fayette	6,396	5,948	448	7.0
Greene	2,895	2,576	319	11.0
Hale	6,102	5,624	478	7.8
Lamar	5,633	5,278	355	6.3
Pickens	7,820	7,291	529	6.8
Tuscaloosa	98,051	92,704	5,347	5.5
Region 3	135,387	127,350	8,037	5.9
Alabama	2,146,157	2,015,189	130,968	6.1
United States	157,130,000	148,833,000	8,296,000	5.3
	March 2016			
	Labor Force	Employed	Unemployed	Rate (%)
Bibb	8,516	7,937	579	6.8
Fayette	6,500	6,026	474	7.3
Greene	2,840	2,540	300	10.6
Hale	6,126	5,675	451	7.4
Lamar	5,641	5,293	348	6.2
Pickens	7,887	7,364	523	6.6
Tuscaloosa	99,474	93,750	5,724	5.8
Region 3	136,984	128,585	8,399	6.1
Alabama	2,156,616	2,023,744	132,872	6.2
United States	158,854,000	150,738,000	8,116,000	5.1

Source: Alabama Department of Labor and U.S. Bureau of Labor Statistics.

The recession that began in 2007 increased the number of unemployed and raised county unemployment rates. A slow recovery has kept county unemployment high in a range of 5.5 percent to 11.0 percent for 2015 (5.9 percent for the region) and between 5.8 percent to 10.6 percent in March 2016, with 6.1 percent for the region. The unemployment rate was lowest in Tuscaloosa County and highest in Greene. Tuscaloosa was the only county in the region with an unemployment rate below Alabama's 6.2 percent.

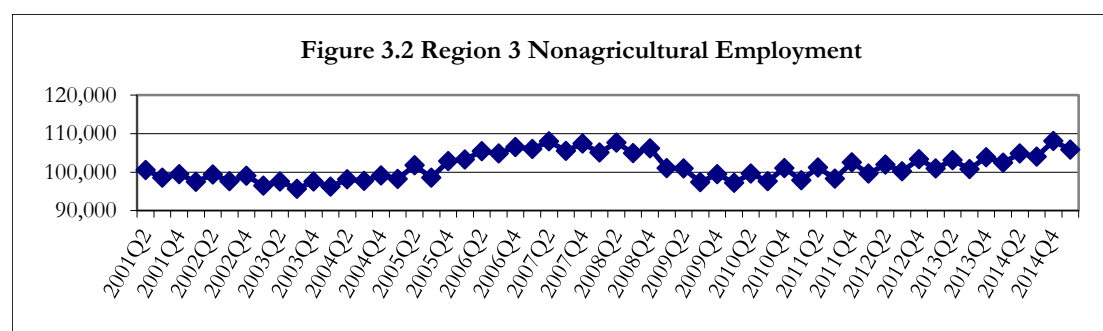
Annual unemployment rates for 2000 to 2015 are shown in Figure 3.1. The region's unemployment rates were low before the 2001 and the most recent recession. The 2002 and 2003 highs of 5.3 percent were due to the effects of the recession of 2001, but successful state and local economic development

efforts reduced unemployment to record lows before the recent financial crises and recession. In 2009 unemployment increased to a record high of 10.4 percent but has been declining since then. By 2015 the rate dropped to 5.9 percent. Year-to-date monthly labor force data point to a slightly lower regional unemployment rate for 2016 than seen in 2015. Despite strong ongoing economic development efforts, the slow recovery from the latest recession and structural changes in the region's economy are expected to keep unemployment somewhat high.



Source: Alabama Department of Labor.

Nonagricultural employment of the region's residents averaged 101,376 quarterly from the second quarter of 2001 to the first quarter of 2015 (Figure 3.2). The number of jobs declined steadily from the fourth quarter of 2008 through the third quarter of 2009 and remained flat until third quarter 2010. Since then nonagricultural employment has been trending up slowly and in the fourth quarter 2014 it was above pre-recession levels for the first time.



Source: Alabama Department of Labor and U.S. Census Bureau.

Table 3.2 shows worker distribution by age in Region 3 for the first quarter of 2015. The region's workforce is younger than Alabama's. Older workers, age 55 and over, are 19.5 percent of the region's nonagricultural employment versus 21.0 percent for the state. Those who are age 65 and over constitute 3.9 percent of nonagricultural employment compared to 4.9 percent for Alabama. Even so, labor force participation of younger residents must increase to meet long term occupational projections for growth and replacement; otherwise older workers may have to work longer.

**Table 3.2 Workers by Age Group (First Quarter 2015)**

Age group	Nonagricultural Employment	
	Number	Percent
14-19	1,664	1.4
19-24	13,692	12.3
25-34	24,639	22.5
35-44	23,410	22.6
45-54	21,814	22.8
55-64	15,844	14.5
65+	4,823	3.9
55 and over total	20,667	19.5
Total all ages	105,886	100.0

Note: Rounding errors may be present. Nonagricultural employment is by place of work, not residence.

Source: U.S. Census Bureau, Local Employment Dynamics Program.

## Commuting Patterns

In 2005 about 5,400 more residents commuted out of the region for work than workers who commuted in (Table 3.3). In 2006 commuter inflow jumped up while outflow shrunk due to economic development successes, reducing net out-commuting to just 324. However, commuter outflow picked up since then and net out-commuting increased to 6,942 in 2014. There is significant commuting inside the region as well but most of commuting is in Tuscaloosa County. Table 3.3 also shows that the one-way average commute time and distance for workers were down in 2015 compared to 2014. This implies that congestion eased in the region. However, congestion will continue posing challenges in problematic areas such as the Tuscaloosa metropolitan area. Thus, regional transportation infrastructure and systems must be maintained and developed to ensure that the flow of goods and movement of workers are not interrupted. Congestion can impede this mobility and slow economic development.

## Population

In 2010, population in Region 3 was 293,927, about 10.0 percent more than in 2000 (Table 3.4). However, population grew in two counties (Bibb and Tuscaloosa) and shrank in all the others. Although population grew in only two counties, the region's population growth was faster than Alabama's 7.5 percent. Population growth was fastest in Tuscaloosa County. Fayette, Greene, Hale, Lamar, and Pickens counties lost residents within the last decade. Annual population estimate for 2015 shows that the region's population has grown by 2.6 percent compared to the state's 1.7 percent. Population grew in Tuscaloosa and Pickens counties but declined in all the others.

Table 3.5 shows population counts, estimates, and projections by age group. The population aged 65 and over grows rapidly after 2010, with the first of the baby boom generation turning 65 years old. Growth of the prime working age group (20-64) and youth (0-19) is expected to lag that of the total population and poses a challenge for workforce development. If employment growth outpaces labor force growth as is expected in the medium and long term, communities that experience rapid job gains may need to consider investments in amenities and infrastructure to attract new residents.

**Table 3.3 Commuting Patterns**

Year	Region 3 Inflow		Region 3 Outflow					
2005	22,299		27,687					
2006	26,135		26,459					
2007	25,786		32,564					
2008	27,259		31,964					
2009	25,400		31,936					
2010	26,291		33,254					
2011	27,984		33,728					
2012	27,672		34,303					
2013	28,654		34,980					
2014	28,183		35,125					
Region 3 Counties	<u>Inflow, 2014</u>		<u>Outflow, 2014</u>					
	Number	Percent	Number	Percent				
Bibb	2,322	5.7	5,883	12.6				
Fayette	2,060	5.0	4,757	10.2				
Greene	894	2.2	2,289	4.9				
Hale	1,267	3.1	4,782	10.2				
Lamar	1,420	3.5	3,548	7.6				
Pickens	1,259	3.1	5,264	11.3				
Tuscaloosa	31,587	77.4	20,228	43.3				
			Percent of workers					
<b>Average commute time (one-way)</b>			<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Less than 20 minutes			51.8	50.9	48.8	45.8	48.9	44.8
20 to 40 minutes			29.12	26.1	27.9	32.4	26.8	31.1
40 minutes to an hour			13.92	13.3	16.6	12.5	14.2	12.2
More than an hour			3.35	4.4	4.3	3.0	2.2	3.5
<b>Average commute distance (one-way)</b>			<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Less than 10 miles			44.36	40.3	41.0	36.9	40.4	37.8
10 to 25 miles			24.67	29.9	26.1	33.0	29.1	34.6
25 to 45 miles			22.05	21.9	24.2	20.7	20.6	18.4
More than 45 miles			7.09	7.1	7.8	7.1	8.9	7.3

Note: Rounding errors may be present.

Source: U.S. Census Bureau; Alabama Department of Labor; and Center for Business and Economic Research, The University of Alabama.

**Table 3.4 Region 3 Population**

	1990 Census	2000 Census	2010 Census	2015 Estimate	Change 2000-2010	% change 2000-2010	Change 2010-2015	% change 2010-2015
Bibb	16,576	20,826	22,915	22,583	2,089	10.0	-332	-1.4
Fayette	17,962	18,495	17,241	16,759	-1,254	-6.8	-482	-2.8
Greene	10,153	9,974	9,045	8,479	-929	-9.3	-566	-6.3
Hale	15,498	17,185	15,760	15,068	-1,425	-8.3	-692	-4.4
Lamar	15,715	15,904	14,564	13,886	-1,340	-8.4	-678	-4.7
Pickens	20,699	20,949	19,746	20,864	-1,203	-5.7	1,118	5.7
Tuscaloosa	150,522	164,875	194,656	203,976	29,781	18.1	9,320	4.8
Region 3	247,125	268,208	293,927	301,615	25,719	9.6	7,688	2.6
Alabama	4,040,587	4,447,100	4,779,736	4,858,979	332,636	7.5	79,243	1.7
United States	248,709,873	281,421,906	308,745,538	321,418,820	27,323,632	9.7	12,673,282	4.1

Source: Center for Business and Economic Research, The University of Alabama and U.S. Census Bureau.

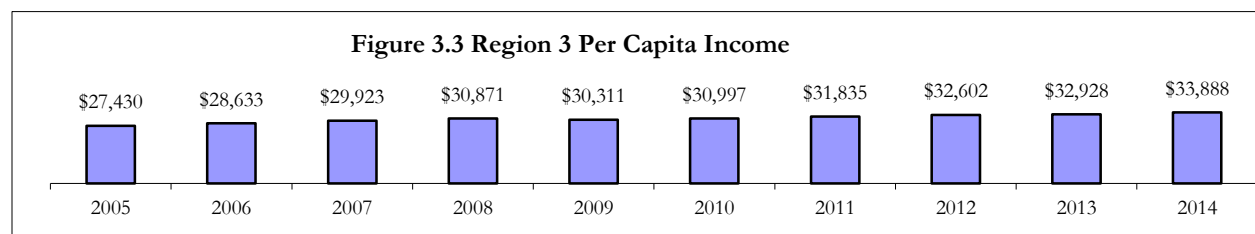
**Table 3.5 Population by Age Group and Projections**

Age Group	2000	2010	2012	2022	2030
0-19	76,831	78,812	76,688	80,162	80,371
20-24	25,257	32,631	35,502	35,768	36,135
25-29	18,834	19,618	18,994	20,266	20,557
30-34	17,275	17,771	18,578	19,033	20,271
35-39	18,707	17,935	16,964	18,984	19,999
40-44	19,689	17,197	17,472	18,386	17,939
45-49	18,729	19,126	18,084	18,103	19,606
50-54	16,247	19,648	19,287	17,755	17,747
55-59	12,442	18,637	19,120	18,395	17,964
60-64	10,636	15,620	16,765	19,060	17,015
65+	33,561	36,932	38,650	52,783	61,944
<b>20-64 Total</b>	<b>157,816</b>	<b>178,183</b>	<b>180,766</b>	<b>185,750</b>	<b>187,233</b>
<b>Total Population</b>	<b>268,208</b>	<b>293,927</b>	<b>296,104</b>	<b>318,695</b>	<b>329,548</b>
<i>Change from 2012</i>					
0-19				4.5%	4.8%
20-64				2.8%	3.6%
Total Population				7.6%	11.3%

Source: Center for Business and Economic Research, The University of Alabama and U.S. Census Bureau.

## Per Capita Income

Per capita income (PCI) in Region 3 was at \$33,888 in 2014 (Figure 3.3), up 24.0 percent from 2005, and \$3,624 below the state average of \$37,512. Per capita income was below the state average in all the seven counties. Tuscaloosa County had the highest PCI with \$35,482 and Bibb had the lowest at \$28,314.



Source: U.S. Bureau of Economic Analysis and Center for Business and Economic Research, The University of Alabama.

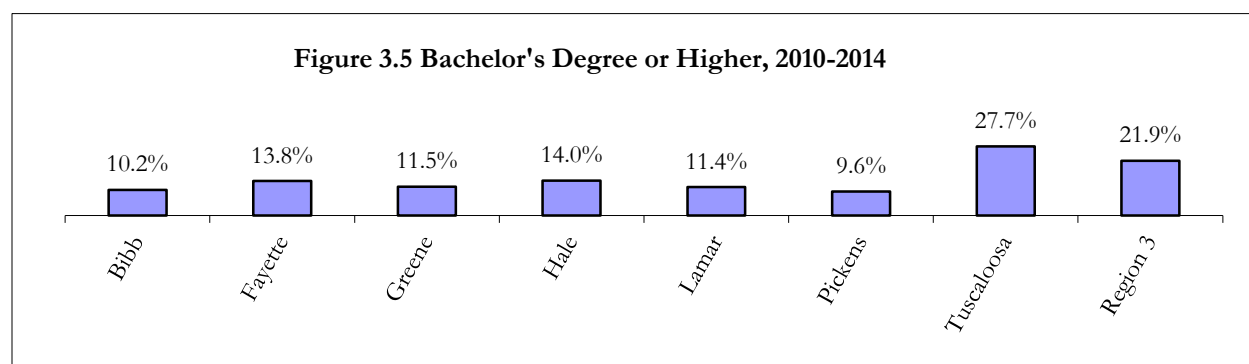
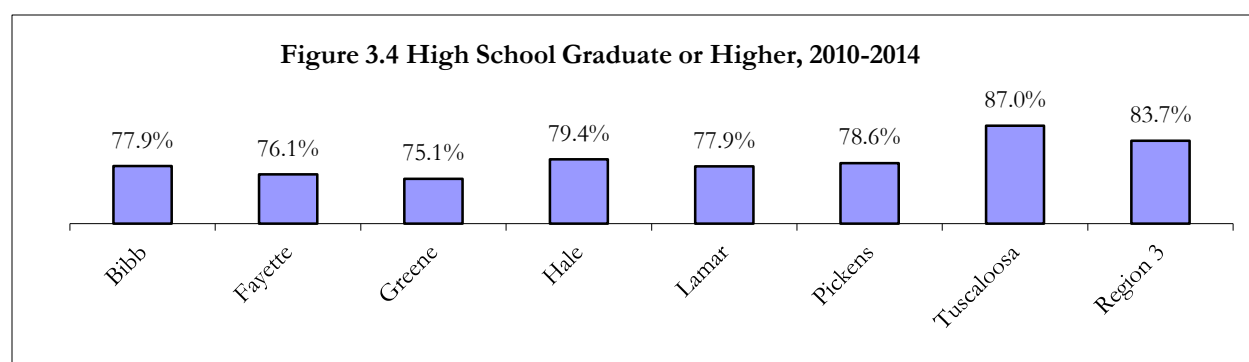
## Educational Attainment

Educational attainment in 2010 to 2014 of Region 3 residents who were 25 years old and over is shown in Table 3.6 and Figures 3.4 and 3.5. About 84.0 percent graduated from high school and 22.0 percent held a bachelor's or higher degree. Tuscaloosa County has higher educational attainment than the other six counties, the region, and the state as a whole. Educational attainment is important as skills rise with education and high-wage jobs for the 21st century demand more skill sets.

**Table 3.6 Educational Attainment of Population 25 Years and Over, 2010-2014**

	<b>Bibb</b>	<b>Fayette</b>	<b>Greene</b>	<b>Hale</b>	<b>Lamar</b>	<b>Pickens</b>	<b>Tuscaloosa</b>	<b>Region 3</b>
Total	15,683	11,935	5,888	10,364	10,112	13,562	119,835	187,379
No schooling completed	259	264	58	133	193	343	1,079	2,329
Nursery to 4th grade	120	78	44	31	3	65	468	809
5th and 6th grade	269	99	105	177	208	135	813	1,806
7th and 8th grade	765	599	208	316	435	338	1,850	4,511
9th grade	632	418	356	299	342	402	2,122	4,571
10th grade	651	559	253	369	474	742	3,410	6,458
11th grade	521	526	314	540	375	675	3,976	6,927
12th grade, no diploma	249	310	130	265	207	201	1,852	3,214
High school graduate/equivalent	6,283	4,543	2,159	4,225	3,863	5,771	36,978	63,822
Some college, less than 1 year	593	702	317	475	825	925	5,813	9,650
Some college, 1+ years, no degree	2,772	1,343	918	1,343	1,376	1,822	20,407	29,981
Associate degree	963	845	348	742	660	838	7,841	12,237
Bachelor's degree	916	914	476	1,070	696	902	19,971	24,945
Master's degree	549	655	157	264	356	270	9,048	11,299
Professional school degree	64	17	42	89	79	43	2,003	2,337
Doctorate degree	77	63	3	26	20	90	2,204	2,483

Source: Center for Business and Economic Research, The University of Alabama and U.S. Census Bureau.



Source: Center for Business and Economic Research, The University of Alabama and U.S. Census Bureau.

## Underemployment and Available Labor

Labor force data are often limited to information on the employed and the unemployed that is available from government sources. However, this information is not complete from the perspective of employers. New or expanding employers are also interested in underemployment because current workers are potential employees. In fact, experience requirements in job ads are evidence that many prospective employers look beyond the unemployed for workers.

Workers in occupations that underutilize their experience, training, and skills are underemployed. These workers might look for other work because their current wages are below what they believe they can earn or because they wish to not be underemployed. Underemployment occurs for various reasons including (i) productivity growth, (ii) spousal employment and income, and (iii) family constraints or personal preferences. Underemployment is unique to areas because of the various contributing factors combined with each area's economic, social, and geographic characteristics.

The existence of underemployment identifies economic potential that is not being realized. It is extremely difficult to measure this economic potential because of uncertainties regarding additional income that the underemployed can bring to an area. It is clear, however, that underemployment provides opportunities for selective job creation and economic growth. A business that needs skills prevalent among the underemployed could locate in places that have such workers regardless of those areas' unemployment rates. A low unemployment rate, which may falsely suggest limited labor availability, is therefore not a hindrance to the business.

The underemployed present a significant labor pool because they tend to respond to job opportunities that they believe are better for reasons that include (i) higher income, (ii) more benefits, (iii) superior terms and conditions of employment, and (iv) a better match with skills, training, and experience. The underemployed also create opportunities for entry level workers as they leave lower-paying jobs for better-paying ones. Even if their previously-held positions are lost or not filled (perhaps due to low unemployment or adverse economic conditions), there is economic growth in gaining higher-paying jobs. Such income growth boosts consumption, savings, and tax collections. Quantifying the size of the underemployed is a necessary first step in considering this group for economic development, workforce training, planning, and other purposes. It is important to note that the underemployed can take on more responsibilities and earn more income, but they cannot be counted on to address possible future worker shortages as they are already employed.

Region 3 had an underemployment rate of 26.7 percent in 2015. Applying this rate to March 2016 labor force data means that 34,384 employed residents were underemployed (Table 3.7). Adding the unemployed gives a total available labor pool of 42,783 for the region. This is 5.1 times the number of unemployed and is a more realistic measure of the available labor pool in the region. Prospective employers must be able to offer the underemployed higher wages, better benefits or terms of employment, or some other incentives to induce them to change jobs. Underemployment rates ranged from 21.4 percent for Fayette County to 32.6 percent for Lamar. Greene County had the smallest available labor pool and Tuscaloosa had the largest. The underemployed are less willing to commute farther and longer for a better job. For the one-way commute, 40.0 percent are prepared to travel for 20 or more minutes longer and 31.3 percent will go 20 or more extra miles. For all workers 40.2 percent will go 20 or more minutes and 32.0 percent will commute 20 or more extra miles.

**Table 3.7 Underemployed and Available Labor by County**

	<b>Region 3</b>	<b>Bibb</b>	<b>Fayette</b>	<b>Greene</b>	<b>Hale</b>	<b>Lamar</b>	<b>Pickens</b>	<b>Tuscaloosa</b>
Labor Force	136,984	8,516	6,500	2,840	6,126	5,641	7,887	99,474
Employed	128,585	7,937	6,026	2,540	5,675	5,293	7,364	93,750
Underemployment rate	26.7%	25.6%	21.4%	22.0%	29.3%	32.6%	31.8%	26.3%
Underemployed workers	34,384	2,030	1,291	558	1,661	1,723	2,343	24,675
Unemployed	8,399	579	474	300	451	348	523	5,724
<b>Available labor pool</b>	<b>42,783</b>	<b>2,609</b>	<b>1,765</b>	<b>858</b>	<b>2,112</b>	<b>2,071</b>	<b>2,866</b>	<b>30,399</b>

Note: Rounding errors may be present. Based on March 2016 labor force data and 2015 underemployment rates.

Source: Center for Business and Economic Research, The University of Alabama and Alabama Department of Labor.

Underemployment rates for counties, Workforce Development Regions (WDRs), and the state were determined from an extensive survey on the state's workforce. A total of 614 complete responses were obtained from Region 3. About 56.0 percent (344 respondents) were employed, of whom 92 stated that they were underemployed. A lack of job opportunities in their area, low wages at available jobs, living too far from jobs, owning a house in the area, other family or personal obligations, and childcare responsibilities are the primary reasons given for being underemployed. Ongoing economic development efforts can help in this regard. Nonworkers cite retirement and disability or other health concerns as the main reasons for their status, but some also cite a lack of job opportunities in their area, living too far from jobs, and social security limitations as additional major reasons. Such workers may become part of the labor force if their problems can be addressed. Indeed a recent study found that the flow of labor force nonparticipants to employment status was 60.0 percent more than that of unemployed workers who gain employment.<sup>3</sup> This implies that the region's available labor pool could be larger than estimated in this report.

A comparison of underemployed workers to the overall workforce in Region 3 shows that:

- Fewer work full-time and more of the part-timers would like to work full-time.
- Slightly more hold multiple jobs.
- They commute longer distances and times.
- More work in business and financial operations; life, physical, and social science; community and social services; healthcare support; food preparations and serving related; building and grounds cleaning and maintenance; sales and related; construction and extraction; production; and transportation and material moving occupations.
- More are in utilities; manufacturing; wholesale trade; retail trade; transportation and warehousing; information; health care and social assistance industries.
- They earn less and have shorter job tenure.
- Fewer believe their jobs fit well with their education and training and skills.
- More believe they are qualified for a better job.
- More would leave their current jobs for higher income.
- Fewer are willing to commute longer and farther for a better job.

<sup>3</sup> Canon, M.E., Kudlyak, M., and Reed, M. (2014). Not Everyone Who Joins the Ranks of the Employed was "Unemployed", *The Regional Economist*, January.

- Fewer are satisfied with their current jobs.
- More are willing to train for a better job.
- More have sought better jobs in the preceding quarter.
- They are more likely to have an associate degree and 4-year college degrees but less likely to have postgraduate education.
- Fewer are married and more are women.
- Their median age is one year lower than that of other employees.
- More are African-American or other nonwhite ethnic groups.
- More are Hispanic and fewer are white.

Table 3.8 shows the detailed survey results on job satisfaction and willingness to train. Responses for overall job satisfaction as well as various aspects of the job were obtained. In general most of the region's workers (77.6 percent) are satisfied or completely satisfied with their jobs. Workers are most satisfied with the work they do and least satisfied with the earnings they receive. Clearly, fewer underemployed workers are satisfied with their jobs (58.7 percent). The underemployed are also much more dissatisfied with their earnings and most satisfied with their work shift.

Workers are generally willing to train for a new or better job, with the underemployed being much more willing (60.0 percent vs. 53.5 percent). However, the willingness to train is strongly influenced by who pays for the cost of training. Workers typically do not wish to pay for the training and so their willingness is highest when the cost is fully borne by government and lowest when the trainee must pay the full costs. The underemployed are more willing to train for the new or better job except when they have to share the cost with the government. The results strongly show that workers expect the government to bear at least a part of the training cost. This expectation may result from worker awareness of government workforce programs that provide such assistance.

**Table 3.8 2015 Job Satisfaction and Willingness to Train (Percent)**

<b>Job Satisfaction</b>						
		Completely Dissatisfied	Dissatisfied	Neutral	Satisfied	Completely Satisfied
<b>Employed</b>						
Overall		4.4	5.8	12.2	32.0	45.6
	Earnings	12.5	9.6	22.7	24.4	29.9
	Retention	6.4	3.5	7.6	17.2	63.4
	Work	2.0	3.5	5.5	24.1	64.8
	Hours	4.4	6.4	9.9	19.5	59.9
	Shift	2.6	2.6	9.6	16.0	68.6
	Conditions	3.8	4.1	12.8	27.3	51.7
	Commuting Distance	6.1	7.3	12.8	10.8	63.1
<b>Underemployed</b>						
Overall		7.6	15.2	18.5	31.5	27.2
	Earnings	25.0	15.2	31.5	20.7	7.6
	Retention	12.0	7.6	18.5	18.5	48.9
	Work	3.3	7.6	13.0	28.3	47.8
	Hours	7.6	13.0	16.3	17.4	45.7
	Shift	2.2	3.3	14.1	25.0	55.4
	Conditions	3.3	7.6	19.6	27.2	42.4
	Commuting Distance	7.6	9.8	14.1	12.0	56.5
<b>Willingness to Train</b>						
		Completely Unwilling	Unwilling	Neutral	Willing	Completely Willing
<b>Employed</b>						
For a new or better job		22.3	6.3	17.8	12.3	41.3
	If paid by trainee	45.5	17.2	18.2	5.3	8.6
	If paid by trainee and government	17.2	9.1	33.5	17.2	14.8
	If paid by government	7.2	2.4	12.4	12.0	63.6
<b>Underemployed</b>						
For a new or better job		15.0	6.3	18.8	12.5	47.5
	If paid by trainee	44.1	16.2	19.1	7.4	5.9
	If paid by trainee and government	11.8	8.8	42.7	13.2	10.3
	If paid by government	5.9	0.0	8.8	14.7	67.7

Note: Rounding errors may be present.

Source: Center for Business and Economic Research, The University of Alabama.

## Workforce Demand

### Industry Mix

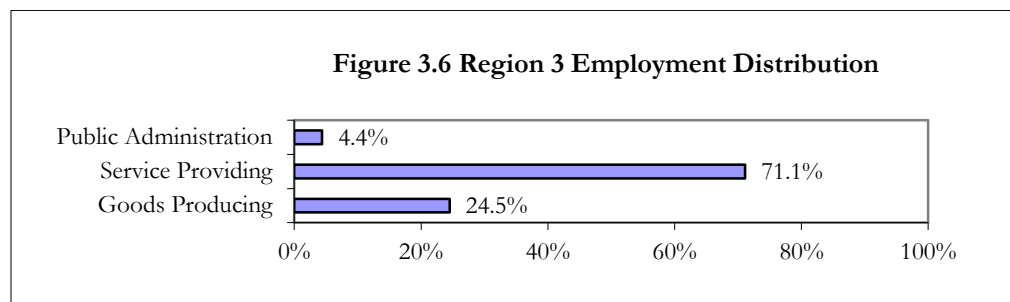
The manufacturing sector was the leading employer with 18,006 jobs in the first quarter of 2015 (Table 3.9). Rounding out the top five industries by employment are health care and social assistance; educational services; retail trade; and accommodation and food services. These five industries provided 68,334 jobs, 64.5 percent of the regional total. The average monthly wage across all industries in the region was \$3,152; two leading employers – manufacturing and educational services – paid more. The highest average monthly wages were for mining at \$6,614, utilities \$5,854, management of companies and enterprises at \$5,053, manufacturing \$4,621, and wholesale trade at \$4,525. At \$1,141, accommodation and food services paid the least. New hire monthly earnings averaged \$1,824, about 58 percent of the region’s average monthly wage. Mining had the highest average monthly new hire wages with \$5,283, followed by utilities at \$3,870, wholesale trade with \$3,531, and manufacturing with \$2,707. Accommodation and food services paid newly hired workers the least, \$902.

**Table 3.9 Industry Mix (First Quarter 2015)**

Industry by 2-digit NAICS Code	Total Employment	Share	Rank	Average Monthly Wage	Average Monthly New Hire Earnings
11 Agriculture, Forestry, Fishing and Hunting	1,021	0.96%	16	\$2,564	\$2,014
21 Mining	2,312	2.18%	13	\$6,614	\$5,283
22 Utilities	379	0.36%	20	\$5,854	\$3,870
23 Construction	4,613	4.36%	8	\$3,124	\$2,575
31-33 Manufacturing	18,006	17.00%	1	\$4,621	\$2,707
42 Wholesale Trade	2,085	1.97%	14	\$4,525	\$3,531
44-45 Retail Trade	12,026	11.36%	4	\$1,989	\$1,286
48-49 Transportation and Warehousing	3,523	3.33%	9	\$3,161	\$2,397
51 Information	880	0.83%	18	\$3,602	\$2,267
52 Finance and Insurance	2,596	2.45%	11	\$3,917	\$2,405
53 Real Estate and Rental and Leasing	1,695	1.60%	15	\$2,765	\$2,073
54 Professional, Scientific, and Technical Services	3,522	3.33%	10	\$3,699	\$2,611
55 Management of Companies and Enterprises	531	0.50%	19	\$5,053	\$2,610
56 Administrative and Support and Waste Management and Remediation Services	6,394	6.04%	6	\$1,802	\$1,653
61 Educational Services	13,670	12.91%	3	\$3,537	\$1,628
62 Health Care and Social Assistance	14,279	13.49%	2	\$3,043	\$1,977
71 Arts, Entertainment, and Recreation	989	0.93%	17	\$1,677	\$1,025
72 Accommodation and Food Services	10,353	9.78%	5	\$1,141	\$902
81 Other Services (Except Public Administration)	2,376	2.24%	12	\$2,103	\$1,639
92 Public Administration	4,637	4.38%	7	\$3,317	\$1,865
<b>ALL INDUSTRIES</b>	<b>105,886</b>	<b>100.00%</b>		<b>3,152</b>	<b>\$1,824</b>

Source: Alabama Department of Labor and U.S. Census Bureau.

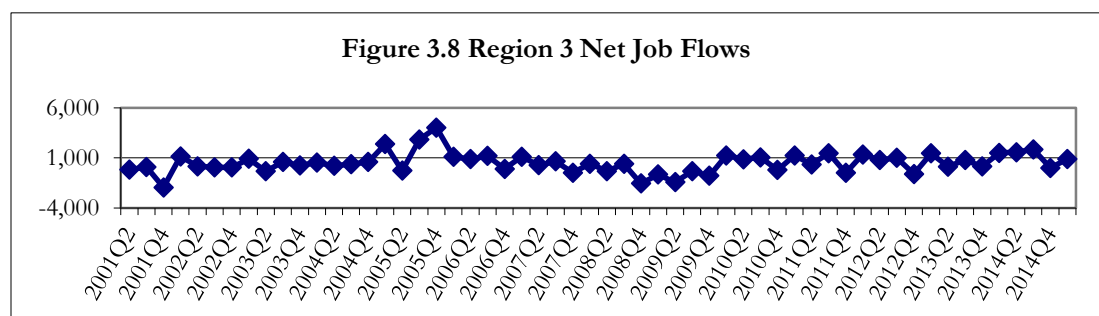
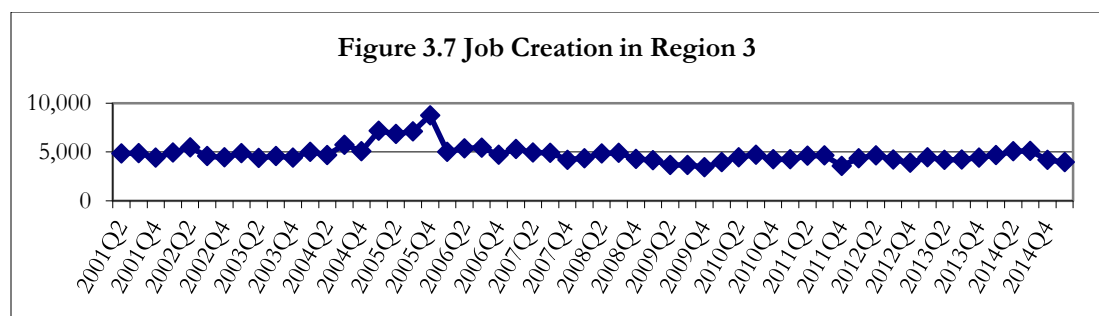
By broad industry classification, service providing industries generated 71.1 percent of jobs in first quarter 2015 (Figure 3.6). Goods producing industries were next with 24.5 percent and public administration accounted for 4.4 percent. The distribution is for all nonagricultural jobs in the region, but there is significant variation by county.



Source: Alabama Department of Labor and U.S. Census Bureau.

## Job Creation and Net Job Flows

On average, 4,775 jobs were created per quarter from second quarter 2001 to first quarter 2015 (Figure 3.7); quarterly net job flows averaged 506 (Figure 3.8). Both job creation and net job flows slightly rose in the fourth quarter of 2013 through third quarter 2014 before dropping. Quarterly net job flows fluctuate considerably and have ranged from a loss of 1,953 to a gain of 4,030. Job creation refers to the number of new jobs that are created either by new area businesses or through the expansion of existing firms. Net job flows reflect the difference between current and previous employment at all businesses.



Source: Alabama Department of Labor and U.S. Census Bureau.

## High-Demand, Fast-Growing, High-Earning, and Sharp-Declining Occupations

Workforce Development Region 3 had 638 single occupations excluding occupational categories. Table 3.10 shows the 40 occupations that are expected to be in high-demand, ranked by projected average annual job openings over the 2012 to 2022 period. Many of these occupations are common to one of the five largest employment sectors identified earlier (Table 3.9): health care and social assistance. Thus, this sector will continue to dominate employment in the region.

The top five high-demand occupations are Team Assemblers; Registered Nurses; First-Line Supervisors of Production and Operating Workers; General and Operations Managers; and Construction Laborers. Fifteen of the high-demand occupations are also fast-growing. This means that these 15 occupations have a minimum annual growth rate of 1.84 percent, much faster than the 1.06 percent average occupational growth rate for both the region and 0.99 percent the state.

The 20 fastest growing occupations ranked by projected growth of employment are listed in Table 3.11. Many of these occupations are related to construction; manufacturing; professional, scientific, and technical services; and health care and social assistance. The top five fast-growing occupations are Personal Financial Advisors; Logisticians; Industrial Engineering Technicians; Helpers—Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters; and Team Assemblers.

Table 3.12 shows the 50 selected highest earning occupations in the region. These occupations are mainly in management, engineering, health, computer, postsecondary education, and business fields and have a minimum mean salary of \$74,393. Seven of the top 10 listed are health occupations and three are in management. Any discussion of earnings must consider that wages vary with experience. Occupations with the highest entry wages may not necessarily have the highest average or experienced wages.

The selected high-earning occupations are generally not fast-growing or in high-demand. Eleven occupations are both high-earning and in high-demand (Table 3.10). Only four occupations—Computer Systems Analysts; Software Developers, Applications; Architects, Except Landscape and Naval; and Industrial Engineers—are in high-demand, fast-growing, and high-earning.

Of the region's 638 occupations, 53 are expected to decline over the 2012 to 2022 period. Employment in the 20 sharpest-declining occupations will fall by at least nine percent, with each losing a minimum of 10 jobs over the period (Table 3.13). No efforts should be made to sustain these occupations because they are declining because of structural changes in the economy of the region.

**Table 3.10 Selected High-Demand Occupations (Base Year 2012 and Projected Year 2022)**

Occupation	Average Annual Job Openings		
	Total	Due to Growth	Due to Separations
Team Assemblers*	225	165	60
Registered Nurses	105	50	55
First-Line Supervisors of Production and Operating Workers	50	30	15
<b>General and Operations Managers</b>	<b>45</b>	<b>20</b>	<b>25</b>
Construction Laborers	45	25	20
Industrial Machinery Mechanics*	45	25	20
Accountants and Auditors	35	10	25
<b>Industrial Engineers*</b>	<b>25</b>	<b>15</b>	<b>10</b>
Personal Care Aides*	25	20	5
First-Line Supervisors of Construction Trades and Extraction Workers	25	15	10
Carpenters	25	15	10
Operating Engineers and Other Construction Equipment Operators	25	10	15
Clergy	20	10	10
<b>Construction Managers</b>	<b>10</b>	<b>5</b>	<b>5</b>
Management Analysts	10	5	5
Healthcare Social Workers	10	5	5
Coaches and Scouts	10	5	5
<b>Pharmacists</b>	<b>10</b>	<b>5</b>	<b>10</b>
Cement Masons and Concrete Finishers	10	5	5
Painters, Construction and Maintenance	10	5	5
<b>Medical and Health Services Managers</b>	<b>5</b>	<b>5</b>	<b>5</b>
Cost Estimators	5	5	5
Logisticians*	5	5	0
Meeting, Convention, and Event Planners*	5	0	0
Market Research Analysts and Marketing Specialists	5	0	0
Personal Financial Advisors*	5	0	0
<b>Computer Systems Analysts*</b>	<b>5</b>	<b>5</b>	<b>0</b>
<b>Software Developers, Applications*</b>	<b>5</b>	<b>0</b>	<b>0</b>
<b>Architects, Except Landscape and Naval*</b>	<b>5</b>	<b>0</b>	<b>0</b>
<b>Electrical Engineers</b>	<b>5</b>	<b>0</b>	<b>5</b>
Industrial Engineering Technicians*	5	5	0
Marriage and Family Therapists*	5	0	0
Nursing Instructors and Teachers, Postsecondary*	5	5	0
<b>Physical Therapists</b>	<b>5</b>	<b>0</b>	<b>0</b>
<b>Nurse Practitioners</b>	<b>5</b>	<b>5</b>	<b>5</b>
Medical and Clinical Laboratory Technicians	5	5	5
Diagnostic Medical Sonographers*	5	0	0
Surgical Technologists*	5	5	0
Physical Therapist Assistants	5	0	0
Millwrights	5	0	0

Note: Occupations are growth- and wages-weighted and data are rounded to the nearest 5. Occupations in bold are also high-earning.

\* - Qualify as both high-demand and fast-growing occupations.

Source: Alabama Department of Labor and Center for Business and Economic Research, The University of Alabama.

**Table 3.11 Selected Fast-Growing Occupations (Base Year 2012 and Projected Year 2022)**

Occupation	Employment		Percent Change	Annual Growth (Percent)	Average Annual Job Openings
	2012	2022			
Personal Financial Advisors*	50	80	39	4.81	5
Logisticians*	80	120	56	4.14	5
Industrial Engineering Technicians*	100	150	44	4.14	5
Helpers—Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters	60	90	46	4.14	5
Team Assemblers*	3,780	5,420	43	3.67	225
Nursing Instructors and Teachers, Postsecondary*	NA	NA	35	3.63	5
<b>Industrial Engineers*</b>	<b>340</b>	<b>480</b>	<b>42</b>	<b>3.51</b>	<b>25</b>
<b>Computer Systems Analysts*</b>	<b>100</b>	<b>140</b>	<b>32</b>	<b>3.42</b>	<b>5</b>
Marriage and Family Therapists*	50	70	30	3.42	5
Computer-Controlled Machine Tool Operators, Metal and	50	70	35	3.42	5
Surgical Technologists*	110	150	32	3.15	5
<b>Software Developers, Applications*</b>	<b>60</b>	<b>80</b>	<b>33</b>	<b>2.92</b>	<b>5</b>
Health Specialties Teachers, Postsecondary	NA	NA	33	2.92	5
Diagnostic Medical Sonographers*	60	80	36	2.92	5
Brickmasons and Blockmasons	60	80	40	2.92	5
Helpers--Carpenters	60	80	31	2.92	5
Industrial Machinery Mechanics*	710	940	32	2.85	45
Personal Care Aides*	750	970	29	2.61	25
<b>Architects, Except Landscape and Naval*</b>	<b>70</b>	<b>90</b>	<b>30</b>	<b>2.54</b>	<b>5</b>
Meeting, Convention, and Event Planners*	50	60	36	1.84	5

Note: Employment data are rounded to the nearest 10 and job openings are rounded to the nearest 5. Occupations in bold are also high-earning. NA – Not available.

\* - Qualify as both high-demand and fast-growing occupations.

Source: Alabama Department of Labor and Center for Business and Economic Research, The University of Alabama.

**Table 3.12 Selected High-Earning Occupations (Base Year 2012 and Projected Year 2022)**

Occupation	Employment		Annual Growth (Percent)	Average Annual Job Openings	Mean Annual Salary (\$)
	2012	2022			
Physicians and Surgeons, All Other	190	210	1.01	5	230,492
Pediatricians, General	20	20	0.00	0	211,077
Dentists, General	40	40	0.00	0	205,036
Chief Executives	70	70	0.00	0	188,261
Psychiatrists	NA	NA	0.00	0	181,009
Podiatrists	NA	NA	0.00	0	146,197
Family and General Practitioners	50	60	1.84	0	142,117
Optometrists	10	10	0.00	0	140,549
Architectural and Engineering Managers	80	90	1.18	5	135,414
Marketing Managers	NA	NA	0.00	0	133,755
Pharmacists*	320	360	1.18	10	127,256
Sales Managers	70	70	0.00	0	122,508
General and Operations Managers*	1,350	1,530	1.26	45	114,037
Financial Managers	180	190	0.54	5	113,155
Computer Science Teachers, Postsecondary	70	80	1.34	0	112,280
Administrative Services Managers	40	50	2.26	0	109,724
Public Relations and Fundraising Managers	NA	NA	0.00	0	109,475
Computer and Information Systems Managers	60	60	0.00	0	106,348
Purchasing Managers	30	40	2.92	0	103,534
Education Administrators, Postsecondary	220	250	1.29	10	102,053
Mining and Geological Engineers, Including Mining Safety Engineers	40	40	0.00	0	101,893
Industrial Production Managers	140	150	0.69	5	101,198
Physician Assistants	40	50	2.26	0	97,476
Medical and Health Services Managers*	160	190	1.73	5	96,685
Transportation, Storage, and Distribution Managers	NA	NA	0.00	0	95,937
Physics Teachers, Postsecondary	NA	NA	2.92	0	94,995
Construction Managers*	280	330	1.66	10	92,490
Chemistry Teachers, Postsecondary	40	50	2.26	0	91,946
Human Resources Managers	40	50	2.26	0	91,474
Psychology Teachers, Postsecondary	40	50	2.26	0	90,638
<b>Software Developers, Applications*</b>	<b>60</b>	<b>80</b>	<b>2.92</b>	<b>5</b>	<b>89,911</b>
Nurse Practitioners*	150	190	2.39	5	88,516
Physical Therapists*	80	90	1.18	5	88,114
<b>Architects, Except Landscape and Naval*</b>	<b>70</b>	<b>90</b>	<b>2.54</b>	<b>5</b>	<b>87,697</b>
Occupational Therapists	40	50	2.26	0	87,310
Environmental Engineers	30	40	2.92	0	85,948
Managers, All Other	340	380	1.12	10	84,739
Speech-Language Pathologists	50	50	0.00	0	84,156
<b>Industrial Engineers*</b>	<b>340</b>	<b>480</b>	<b>3.51</b>	<b>25</b>	<b>83,477</b>
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	NA	NA	1.06	5	83,061
<b>Computer Systems Analysts*</b>	<b>100</b>	<b>140</b>	<b>3.42</b>	<b>5</b>	<b>81,262</b>
Mechanical Engineers	70	80	1.34	5	80,133
Engineers, All Other	50	50	0.00	0	78,047
Veterinarians	60	70	1.55	5	75,425
Political Science Teachers, Postsecondary	30	30	0.00	0	75,301
Computer Occupations, All Other	20	20	0.00	0	75,027
Loan Officers	160	180	1.18	5	74,735
Electrical Engineers*	130	160	2.10	5	74,599
Biological Science Teachers, Postsecondary	70	80	1.34	0	74,580
Business Teachers, Postsecondary	NA	NA	1.55	5	74,393

Note: Employment data are rounded to the nearest 10 and job openings to the nearest 5. The salary data provided are based on the May 2014 release of the Occupational Employment Statistics (OES) combined employment and wage file. Estimates for specific occupations may include imputed data. Occupations in bold are also fast-growing. NA – Not available.

\* - Qualify as both high-earning and high-demand occupations.

Source: Center for Business and Economic Research, The University of Alabama and Alabama Department of Labor.

**Table 3.13 Selected Sharp-Declining Occupations (Base Year 2012 and Projected Year 2022)**

Occupation	Employment		Net Change	Percent Change
	2012	2022		
Farmers, Ranchers, and Other Agricultural Managers	1,840	1,550	-290	-16
Meat, Poultry, and Fish Cutters and Trimmers	760	600	-160	-21
Postal Service Mail Carriers	300	210	-90	-30
Roof Bolters, Mining	NA	NA	-80	-17
Psychiatric Aides	410	370	-40	-10
Sewing Machine Operators	130	100	-30	-21
Excavating and Loading Machine and Dragline Operators	170	150	-20	-11
Textile Knitting and Weaving Machine Setters, Operators, and Tenders	NA	NA	-20	-11
Couriers and Messengers	130	110	-20	-12
Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	120	100	-20	-17
Data Entry Keyers	70	50	-20	-25
Reporters and Correspondents	50	30	-20	-30
Postal Service Clerks	60	40	-20	-35
Office Machine Operators, Except Computer	70	60	-10	-9
Conveyor Operators and Tenders	90	80	-10	-9
Telecommunications Line Installers and Repairers	NA	NA	-10	-11
Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	50	40	-10	-13
Editors	90	80	-10	-14
Advertising Sales Agents	50	40	-10	-14
Mail Clerks and Mail Machine Operators, Except Postal Service	40	30	-10	-14

Note: Employment data are rounded to the nearest 10. NA - Not available due to disclosure restrictions.

Source: Alabama Department of Labor and Center for Business and Economic Research, The University of Alabama.

## Skills and Skills Gap Analyses

Jobs require skill sets and it is necessary that jobholders have the relevant skills. Table 3.14 shows skill types and definitions as provided by O\*NET Online, which offers skill sets for all occupations ranked by the degree of importance. High-earning occupations typically require skills that are obtained in the pursuit of the high educational attainment levels that such jobs require. Lower earning occupations require more basic skill sets. Some occupations have no minimum skill set requirements (e.g. dishwashers and maids).

Table 3.15 shows the percentage of selected occupations in the region that list a particular skill as primary. We define primary skills as the 10 most important skills in the required skill set for an occupation. It is important to note that a particular skill may be more important and more extensively used in one occupation than another. Table 3.15 does not address such cross-occupational skill importance comparisons. In general, basic skills are most frequently listed as primary, which means that they are important for practically all jobs.

**Table 3.14 Skill Types and Definitions**

<p><b>Basic Skills:</b> Developed capacities that facilitate learning or the more rapid acquisition of knowledge.</p> <p>Active Learning — Understanding the implications of new information for both current and future problem-solving and decision-making.</p> <p>Active Listening — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.</p> <p>Critical Thinking — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems.</p> <p>Learning Strategies — Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.</p> <p>Mathematics — Using mathematics to solve problems.</p> <p>Monitoring — Monitoring / Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.</p> <p>Reading Comprehension — Understanding written sentences and paragraphs in work-related documents.</p> <p>Science — Using scientific rules and methods to solve problems.</p> <p>Speaking — Talking to others to convey information effectively.</p> <p>Writing — Communicating effectively in writing as appropriate for the needs of the audience.</p> <p><b>Complex Problem Solving Skills:</b> Developed capacities used to solve novel, ill-defined problems in complex, real-world settings.</p> <p>Complex Problem Solving — Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.</p> <p><b>Resource Management Skills:</b> Developed capacities used to allocate resources efficiently.</p> <p>Management of Financial Resources — Determining how money will be spent to get the work done and accounting for these expenditures.</p> <p>Management of Material Resources — Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.</p> <p>Management of Personnel Resources — Motivating, developing, and directing people as they work, identifying the best people for the job.</p> <p>Time Management — Managing one's own time and the time of others.</p> <p><b>Social Skills:</b> Developed capacities used to work with people to achieve goals.</p> <p>Coordination — Adjusting actions in relation to others' actions.</p> <p>Instructing — Teaching others how to do something.</p> <p>Negotiation — Bringing others together and trying to reconcile differences.</p> <p>Persuasion — Persuading others to change their minds or behavior.</p> <p>Service Orientation — Actively looking for ways to help people.</p> <p>Social Perceptiveness — Being aware of others' reactions and understanding why they react as they do.</p> <p><b>Systems Skills:</b> Developed capacities used to understand, monitor, and improve socio-technical systems.</p> <p>Judgment and Decision Making — Considering the relative costs and benefits of potential actions to choose the most appropriate one.</p> <p>Systems Analysis — Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.</p> <p>Systems Evaluation — Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.</p> <p><b>Technical Skills:</b> Developed capacities used to design, set-up, operate, and correct malfunctions involving application of machines or technological systems.</p> <p>Equipment Maintenance — Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.</p> <p>Equipment Selection — Determining the kind of tools and equipment needed to do a job.</p> <p>Installation — Installing equipment, machines, wiring, or programs to meet specifications.</p> <p>Operation and Control — Controlling operations of equipment or systems.</p> <p>Operation Monitoring — Watching gauges, dials, or other indicators to make sure a machine is working properly.</p> <p>Operations Analysis — Analyzing needs and product requirements to create a design.</p> <p>Programming — Writing computer programs for various purposes.</p> <p>Quality Control Analysis — Conducting tests and inspections of products, services, or processes to evaluate quality or performance.</p> <p>Repairing — Repairing machines or systems using the needed tools.</p> <p>Technology Design — Generating or adapting equipment and technology to serve user needs.</p> <p>Troubleshooting — Determining causes of operating errors and deciding what to do about it.</p>
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Source: O\*NET Online (<http://online.onetcenter.org/skills/>).

**Table 3.15 Percentage of Selected Occupations for Which Skill Is Primary**

	Selected High-Demand Occupations	Selected Fast-Growing Occupations	Selected High-Earning Occupations
<b>Basic Skills</b>			
Active Learning	25	54	54
Active Listening	90	88	88
Critical Thinking	100	86	86
Learning Strategies	10	16	16
Mathematics	5	10	10
Monitoring	80	50	50
Reading Comprehension	60	80	80
Science	5	22	22
Speaking	80	86	86
Writing	35	56	56
<b>Complex Problem Solving Skills</b>			
Complex Problem Solving	65	62	62
<b>Resource Management Skills</b>			
Management of Financial Resources	0	2	2
Management of Material Resources	0	0	0
Management of Personnel Resources	0	16	16
Time Management	50	18	18
<b>Social Skills</b>			
Coordination	60	32	32
Instructing	15	18	18
Negotiation	0	10	10
Persuasion	5	10	10
Service Orientation	25	20	20
Social Perceptiveness	30	44	44
<b>Systems Skills</b>			
Judgment and Decision Making	60	76	76
Systems Analysis	15	6	6
Systems Evaluation	15	6	6
<b>Technical Skills</b>			
Equipment Maintenance	10	0	0
Equipment Selection	5	0	0
Installation	0	0	0
Operation and Control	15	0	0
Operation Monitoring	15	0	0
Operations Analysis	10	8	8
Programming	10	4	4
Quality Control Analysis	20	0	0
Repairing	5	0	0
Technology Design	0	0	0
Troubleshooting	5	0	0

Note: Rounding errors may be present.

Source: O\*NET Online and Center for Business and Economic Research, The University of Alabama.

High-earning occupations require more active learning, learning strategies, math, reading comprehension, science, speaking, writing, personnel resource management, negotiation, persuasion, and judgment and decision making skills than both high-demand and fast-growing jobs. Most of these skills require long training periods and postsecondary education. However, high-earning jobs require less technical skills. High-demand occupations require more active learning, active listening, reading comprehension, science, speaking, writing, personnel resource management, financial resource management, judgment and decision making, and social skills than fast-growing occupations; but less technical skills. Both high demand and fast growing occupations in general require more technical skills than high earning occupations.

Table 3.16 shows skill gap indexes for all 35 skills in Table 3.14 based on a previous projection period (2008 to 2018). Skills gap indexes range up to 100 and are standardized measures of the gap between current supply and projected demand. The index does not provide any information about current or base year skill supply. Its focus is on the projection period and identifies critical skill needs. The index essentially ranks expected training needs. The higher the index the more critical is the skill over the specified projection period.

For policy and planning purposes, skill gap indexes have to be considered together with replacement indexes, which are the expected shares of job openings due to replacement. Replacement is necessary because of turnover and people leaving the labor force. The smaller the replacement index, the larger the share of job openings due to growth, which in turn implies a need to increase the pace of skill training. Skill gap indexes point to the need to ramp up the scale of skill training while replacement indexes address the pace of training.

By skill type the skill gap indexes show that basic skills are most critical followed by social, complex problem solving, resource management, system, and technical skills. Although the skills gap indexes are for a previous projection period, they are applicable to the current occupation projections. The importance of basic skills generally and for high-demand, high-growth, and high-earning jobs indicates a strong need for training in these skills. The pace of training needs to increase for technical, systems, and resource management skills; the scale of training should be raised for basic and social skills.

## **Education and Training Issues**

Educational attainment in Region 3 is about the same as that of the state as a whole. About 84.0 percent of residents age 25 and over had graduated from high school in 2010 to 2014, same as for Alabama. Of that population, about 22.0 percent have a bachelor's or higher degree versus 23.0 percent for the state. Skill and education requirements for jobs keep rising. This highlights a strong need to raise educational attainment in the region.

Table 3.17 shows the number of selected occupations in the region for which a particular education/training category is most common. In general, high-earning occupations require high educational attainment levels; only two of the high-earning occupations do not require a bachelor's or higher degree. Twenty-eight (70.0 percent) of the 40 high-demand occupations require an associate degree at the minimum and 23 (58.0 percent) require a bachelor's or higher degree. Twelve (60.0 percent) of the 20 fast-growing occupations require an associate degree at the minimum, with 10 (50.0 percent) requiring a bachelor's or higher degree.

The 2012 to 2022 occupational projections indicate that future jobs will require postsecondary education and training at a minimum. Job ads are increasingly requiring a high school diploma or GED at a minimum. Of the region's 638 single occupations, 53 are expected to decline over the period and education and training for these should slow accordingly.

**Table 3.16 Skills Gap Indexes (Base Year 2008 to Projected Year 2018)**

<b>Skill</b>	<b>Total Openings (Projected Demand)</b>	<b>Replacement Index</b>	<b>Skills Gap Index</b>
Reading Comprehension	1,595	64	100
Active Listening	1,560	66	97
Critical Thinking	1,455	64	94
Speaking	1,260	63	91
Coordination	1,245	63	89
Active Learning	1,270	64	86
Instructing	1,175	64	83
Monitoring	1,125	64	80
Time Management	1,060	63	77
Writing	1,105	64	74
Social Perceptiveness	1,035	63	71
Learning Strategies	965	64	69
Service Orientation	830	63	66
Complex Problem Identification	740	60	63
Judgment and Decision Making	770	64	60
Persuasion	770	66	57
Mathematics	660	63	54
Equipment Selection	615	65	51
Equipment Maintenance	460	62	49
Troubleshooting	390	63	46
Management of Personnel Resources	415	72	43
Negotiation	345	75	40
Installation	315	60	37
Repairing	275	58	34
Operation and Control	235	68	31
Operation Monitoring	275	69	29
Quality Control	120	63	26
Operations Analysis	145	66	23
Management of Financial Resources	225	76	20
Systems Evaluation	135	67	17
Science	90	67	14
Management of Material Resources	125	80	11
Systems Analysis	55	55	9
Technology Design	60	58	6
Programming	20	50	3

Note: The skills gap indexes are from 2008 to 2018 projection period and not 2012 to 2022.

Source: Alabama Department of Labor.

**Table 3.17 Number of Selected Occupations by Education/Training Requirement**

Most Common Education/Training Requirements Categories	Selected High-Demand Occupations	Selected Fast-Growing Occupations	Selected High-Earning Occupations
Doctoral Degree or First Professional Degree	2	1	17
Master's Degree	4	2	5
Bachelor's or Higher Degree Plus Work Experience	5	2	16
Bachelor's Degree	12	5	10
Associate Degree	5	2	0
Postsecondary Non-Degree Plus On-the-job Training	1	0	0
Postsecondary Non-Degree	1	1	0
Some College, no Degree Plus On-the-job Training	0	0	0
Some College, no Degree	0	0	0
High School Diploma Plus On-the-job Training	6	4	2
High School Diploma	0	0	0
Less than High School Plus On-the-job Training	4	3	0
Less than High School	0	0	0

Note: The on-the-job training refers to the typical on-the-job training needed to attain competency in the occupation in addition to the typical education needed for entry to the occupation. This could be long-term, moderate-term, or short-term on-the-job training. **Long-term** requires more than 12 months on-the-job training. **Moderate-term** requires one to 12 months of on-the-job training. **Short-term** requires up to one month of on-the-job training. These types of training are more common in occupations that require postsecondary non-degree or less educational attainment. Other types of on-the-job training requirements that may be needed but are not shown on the table are apprenticeship and internship/residency that are typical in certain professions many of which require higher educational attainment.

Source: O\*NET Online; Center for Business and Economic Research, The University of Alabama; and Alabama Department of Labor.

## Implications and Recommendations

From a 2012 base, worker shortfalls of 12,575 for 2022 and 21,649 in 2030 are expected (Table 3.18). This is because jobs are expected to grow faster than the working age group and the total population. A focus on worker skills and the expected shortfalls must be priorities for the medium and long term. Worker shortfalls for critical occupations will need to be addressed through 2030.

**Table 3.18 Expected Worker Shortfall**

	2012-2022	2012-2030
Total population growth (percent)	7.6	11.3
Age 20-64 population growth (percent)	2.8	3.6
Nonagricultural job growth (percent)	14.2	23.3
Worker shortfall (percent)	11.4	19.7
Worker shortfall (number)	12,575	21,649

Source: Center for Business and Economic Research, The University of Alabama.

Employment is critical to economic development and so strategies to address potential shortfalls must be adopted and implemented. Such strategies should aim at increasing labor force participation, encouraging in-migration, and raising worker productivity. Efforts to address the need for higher labor force participation, higher productivity, and faster labor force growth to meet workforce demand must include: (1) improvements in education and its funding; (2) continuation and enhancement of programs to assess, retrain, and place dislocated workers; (3) focus on hard-to-serve populations (e.g. out-of-school youth); (4) lowering of the high school dropout rate; (5) use of economic opportunities to attract new residents; (6) encouragement of older worker participation in the labor force; and (7) facilitation of in-commuting.

Improving education is vital because a highly educated and productive workforce is a critical economic development asset. The educational and training requirements of high-demand, fast-growing, and high-earning occupations show the significance of education in developing the workforce of the future. The importance of basic skills generally and for high-demand, high-growth, and high-earning jobs demonstrates a strong need for training in these skills. The pace of training needs to increase for technical, systems, and resource management skills; the scale of training should be raised for basic and social skills. Ideally, all high school graduates should possess basic skills so that postsecondary and higher education can focus on other and more complex skills while enhancing these basic skills. Employers should be an integral part of planning for training as they can help identify future skill needs and any existing gaps. Education and training for the 20 sharp-declining occupations in Table 3.13 should slow accordingly.

Another very important reason to improve education is that more educated people are more likely to work; data on worker participation and educational attainment show that labor force participation increases with worker education. Productivity also rises with education, which yields high private and social returns. Workforce development must view all of the education and other programs (e.g. adult education, career technical training, worker retraining, career readiness, etc.) as one system. Funding to support workforce development may require tax reform at state and local levels and must provide for flexibility as workforce needs change over time and demand different priorities.

Programs to assess, retrain, and place dislocated workers—especially those affected by outsourcing and structural changes in the economy—should be continued and enhanced because they can improve the labor force participation rate. Hard-to-serve populations include persons in poverty, those receiving welfare, those in sparsely populated areas, and those on active parole. These populations are often outside of the mainstream economy and are in poverty. They usually have difficulty finding work because they have low levels of educational attainment, lack occupational skills, or face geographic or other barriers. They are a potential human resource and investment in training, transportation, childcare, infrastructure, etc. may be needed to tap this resource.

In-migration is one way of growing the labor force as it helps population growth. The region's population growth is high but the labor force growth rate is not expected to meet job future demand. Higher employment demand could be alleviated somewhat with in-commuting. However, new residents can be attracted using the higher-paying job opportunities from the region's economic development successes. Investment in amenities and infrastructure may be needed to support such growth. In-migration is generally more beneficial to a region than in-commuting since it grows the economy faster and adds to the tax base.

Policies that facilitate and encourage older worker participation are needed as older workers can help meet the region's workforce challenge. Such policies can be related to income taxation, job flexibility, and retirement programs. As the share of older people in the population is projected to increase (see Table 3.5), it becomes even more important that they be active in the workforce. Older worker participation has been rising nationally since the early 1990s. This has been attributed to reasons including:

- Older workers can work longer because they are healthier
- The number of physically demanding jobs is falling
- Defined contribution plans are replacing pensions
- There are fewer employer-paid retiree health insurance programs
- Social security reforms affecting those born after 1938 that (i) gradually raise the normal retirement age from 65 to 67, (ii) increase the rate at which monthly payments rise with delayed benefits, and (iii) eliminate the reduction in benefits for those working beyond the full retirement age.

Diversifying the region's economy will strengthen it. This demands that economic development also focus on retaining, expanding, and attracting businesses that provide more high-earning jobs. Current workers—including the underemployed—would welcome higher-earning opportunities. An economic development focus on diversification would require that workforce development pay attention to postsecondary and higher education systems to ensure a ready and available workforce for new and expanding businesses. The higher incomes earned by graduates of these institutions will help raise personal income for the region and provide additional local (county and city) tax revenue. Raising personal income by improving educational attainment and technological skills is an effective economic development strategy. Together, workforce development and economic development can build a strong, well-diversified economy. Indeed, one cannot achieve success without the other.